Met Office

NEWS

Reducing odds to limit warming to 1.5°C rise

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13:01 (UTC) on Mon 20 Mar 2023

Aspirations of halving global emissions by 2030 would only deliver a 50:50 chance of keeping the most ambitious pledge of the Paris Agreement alive, says the Met Office.

To ensure a greater chance of global temperature rise not exceeding 1.5 °C, global emissions need to peak immediately and reduce by more than half by 2030 compared with 1990 levels.

The Met Office statement coincides with the publication of the latest IPCC report, published at 2pm (CET) on Monday 20 March 2023. Today's IPCC synthesis report is the last in a series known as the Sixth Assessment Report (AR6).

Prof Jason Lowe OBE is the head of climate services at the Met Office. He said: "Studies indicate that cutting emissions to half of 1990 levels by 2030 are the scale of what is required for compliance with the aim of 1.5 °C. But even this level of cut only yields around a 50 per cent chance of staying at or below the 1.5 °C target.

"For greater certainty of staying below the 1.5 °C level then even bigger emission reductions become necessary. This further strengthens the case for needing early and rapid emission reductions across the world."

Professor Helene Hewitt OBE is an IPCC Coordinating Lead Author and Met Office Science fellow. She said: "Keeping global temperature rise as low as possible is vital to protect the UK's coasts. Sea levels will continue to rise for centuries, but every incremental rise in temperature increases the risk of flooding of our coastal communities, infrastructure, and cherished landscapes."

IPCC AR6 synthesis report

Dr Chris Jones is a Met Office climate science fellow and a lead author of today's IPCC's AR6 synthesis report.

The report brings together the findings of the three previous AR6 volumes on the Physical Science, Mitigation and Adaptation published over the last couple of years, as well as three special reports on: Global Warming of 1.5 °C; the ocean and cryosphere; and climate change and land.

Dr Chris Jones said: "Today's report reveals the sheer scale of the ambition required to avoid the worst consequences of climate change. We know that climate change is already happening, and the world has already witnessed extreme events associated with the relatively modest warming we have seen so far. In fact, the world now is the coolest it is going to be, at least for many decades.

"The report underscores the need for urgent action – today's decisions have implications for future generations. Without immediate and equitable mitigation and adaptation, climate change increasingly threatens societies and human wellbeing.

But the report also shows the range of currently available and cost-effective mitigation and adaptation options. Renewed efforts to invest in sustainable development give us the best chance of a climate-resilient future."

Join the Met Office's Aidan Mcgivern as he discusses the key points of the IPCC's synthesis report with Met Office scientists Dr Chris Jones and Prof Richard Betts and the University of Exeter's Dr Anna Harper.

Will the world exceed a 1.5 °C rise?

Limiting warming to 1.5 °C may involve relying on measures to remove greenhouse gases from the atmosphere. Potentially, this could cool the Earth back to 1.5 °C by the end of the Century, after exceeding it in the next few decades.

Prof Lowe added: “However, measures to remove greenhouse gases from the atmosphere have not been fully tested or deployed at scale.”

Professor Richard Betts MBE is Head of Climate Impacts Research at the Met Office and University of Exeter. He said: “1.5 °C warming doesn’t represent a point where sudden changes will be initiated in the climate system. Staying below it is a target. But the greater the warming, the more severe the impacts of climate change will be.

“If we could manage to lower temperatures after overshooting 1.5 °C, this would limit the damage in the longer term. However, overshooting 1.5 °C increases the risk of some the world’s icesheets passing a “tipping point” and becoming committed to faster melting, leading to even more rapid sea level rise than staying below 1.5 °C.”

Other impacts from overshooting include potentially irreversible tipping points and ecosystem losses.

Dr Camilla Mathison is a Met Office expert on climate mitigation. She said: “Proponents of temporarily overshooting 1.5 °C need to be aware that the IPCC report includes very few pathways that allow temperature rise to exceed 1.8 °C and subsequently return to 1.5 °C by 2100. This is because it is not currently considered possible to withdraw the volume of carbon-dioxide needed to achieve that from the atmosphere.”

Fighting for every fraction of a degree

Risks are increasing with every increment of warming, and the AR6 assessment has found that impacts are more severe and longer lasting than previously assessed.

Dr Chris Jones said: “It is disconcerting there is no guarantee of keeping global temperature rise to 1.5 °C without an overshoot. But in the seven years left before 2030 we have to fight for every fraction of a degree.

“Current policies are not on track to meet already-agreed climate targets. The science within today’s IPCC report provides all the necessary evidence to encourage greater ambition.

“The next round of reports will take several years to publish. By that time - at the current rate of emissions - we are likely to have used up most of the carbon budget for 1.5 °C and missed the rapidly narrowing window of opportunity.”

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